

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1,4,7,8,10-16 and 31-34 are pending in the application.

The amendments to the claims are made for the sake of clarity and to place the claims in better form for appeal. The amendments are believed to introduce no new matter; accordingly, entry of these amendments is believed proper and is respectfully requested.

Support for the amendment to claims 1 and 13 to refer to the same amount of a pigment other than calcium oxalate is found, *inter alia*, at specification page 14, Example 4.

Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Description of the Invention

The inventors have discovered that calcium oxalate can be used to replace a considerable part of conventional pigments that are used in paper and board making without impairing brightness and opacity, but while providing important technical advantages: (1) a reduction in the combustion residue and (2) a reduction in the wear of the paper making wire.

The inventors have discovered that calcium oxalate:

a) has good optical properties for paper making, which had not been reported before the priority date of the present invention;

b) has particular application as a pigment. In this respect, we refer the Examiner to the second paragraph on page 4, wherein it is stated that the light scattering coefficient in combination with pigment packing gives a much better optical effect than could be expected based on the rather modest refractive index;

c) drastically reduces the combustion residue of the mineral pigment part of coated paper. Reduction of the combustion residue is of great importance when recycling fibers with combustion and energy recovery; papers with a lower combustion residue will produce less ash.

d) reduces the wear of the paper making wire as compared to that of other pigments.

Taken together, the above features solve a very specific problem, frequently encountered with modern, high-quality papers. These features should not be examined separately.

The Rejections under 35 U.S.C. § 103(a)

I. Claims 12 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hampl Jr. (US 5,893,372) in view of Briskin et al (US 3,608,559) Simon (US 4,303,084, and Durocher (US 4,615,345) (herein Hampl, Briskin '559, Simon and Durocher, respectively). Applicant respectfully traverses this rejection.

II. Claims 1,4,7 (1,4,31), 10, (1,4, 31), 11 (1,4,31) 13-16, 31, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hampl Jr. (U.S. 5,893,372) in view of Briskin et al (US 3,608,559 "), as evidenced by Briskin et al (U.S. 3,556,109), (herein Hampl, Briskin '559, and Briskin '109, respectively. Applicant respectfully traverses this rejection.

III. Claims 8(1,4,31), are rejected under 35 U.S.C. 103(a) as being unpatentable over Hampl Jr. (US 5,893,372) in view of Briskin et al (US 3,608,559) as evidenced by Briskin (US 3,556,109), as applied to claims 1, 4, 7(1,4,31) 10 (1,4,31), 11 (1,4,31), 13-16, 31, 33, and 34 above, and further in view of Rafton (US 1,934,638), herein Hampl, Briskin '559, Briskin '109 and Rafton, respectively). Applicant respectfully traverses this rejection.

IV. Claims 12 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hampl Jr. (US 5,893,372) in view of Briskin et al (US 3,608,559) as evidenced by Briskin (US 3,556,109), as applied to claims 1, 4, 7(1,4,31) 10 (1,4,31), 11 (1,4,31), 13-16, 31, 33, and 34 above, and further in view of Durocher (US 4,615,345), herein Hampl, Briskin '559, Briskin '109 and Durocher, respectively). Applicant respectfully traverses this rejection.

The problem in the art is that good optical properties in coated papers and boards can normally only be obtained by increasing the proportion of mineral pigments. However, increasing the proportion of mineral pigments leads to greatly increased ash content (i.e., a larger combustion residue), which is undesirable.

The claimed methods and paper refer to "coated paper." At the time of making the present invention, it was quite surprising that replacing a part or all of the conventional pigments that were used in the preparation of a coating color provided a coated, wood-free paper that had excellent optical properties.

Even more, by replacing such pigments with calcium oxalate, the combustion residue could be reduced, which is extremely important for recycling of coated papers. As known, present-day coated papers can contain mineral pigments in amounts in excess of 50% of the total weight of the paper or board. The normal printing papers contain more "stone" than "fiber." The fiber is merely a matrix, which gives proper mechanical properties to the paper or board sheet. Faced with the problem of recycling increasing amounts of pigments, the art desires that those papers and boards that are to be combusted have a lower combustion residue.

Prima facie obviousness is not established. The cited art, even taken in combination, does not address the problem in the art, nor suggest or reaches the solution.

The First Rejection under 35 U.S.C. § 103(a)

The first rejection is directed against Applicant's claims 12 and 32. Claim 12 is directed to a method of reducing wear of a coated, wood-free paper making wire. Claim 32 is directed to the method of claim 12 in which calcium oxalate is a filler.

Hampl is the primary piece of cited art. Hampl discloses high opacity cigarette wrapping papers made of a white pigment and a black pigment. The white pigment may

be calcium carbonate. Hampl is relied on for teaching that Hampl's cigarette papers are made by a slurry (col 6, lines 39+).

The Examiner states that Hampl does not detail the process by which the paper is made, nor does Hampl teach the addition of calcium oxalate to the pulp and/or coating. Further, the Examiner states that Hampl does not teach that the paper should be coated.

The combination of secondary art does not cure the deficiencies in Hampl. Briskin '559 is relied on for teaching that a calcium compound in a cellulosic material can be converted to calcium oxalate by treatment with oxalic acid and that the technique results in "improved ashing." The Examiner finds motivation to "improve the ashing" properties of cigarette paper in the combination of the cited art.

However, claims 12 and 32 are directed to methods for reducing wear of the wire that is used in the paper making process; neither claim 12 nor claim 32 is directed to an improvement in the ashing of cigarette paper. Therefore, the Examiner's motivation fails.

None of the secondary art - not Briskin '559, or Simon (relied on for disclosing that a polymeric chlorine containing film can be applied to a cigarette paper in order to limit the free burning time) or Durocher (relied on for disclosing that the manufacture of cigarette paper is well established), alone or in combination, suggest that the artisan can reduce the wear of the wire that is used in the making of coated, wood-free papers, by incorporating calcium oxalate to be 10-100% of the total pigment.

Accordingly, *prima facie* obviousness is not established for at least the following reasons. (1) There must be a basis in the art for combining or modifying the cited art. Here, the Examiner has pointed to nothing in the cited art that would suggest that wear

on the wire that is used in making coated wood-free papers could be reduced by adding calcium oxalate according to the claims. (2) The Examiner has relied on art that teaches how to improve the ashing of cigarette papers. However, improvements in the ashing of cigarette papers is non-analogous art to how to reduce the wear on the wire used in the paper making machine. (3) The cited art does not teach the problem with the wear of the wire that is used to make coated, wood-free paper. Therefore, the cited art does not suggest the solution.

The Second Rejection under 35 U.S.C. § 103(a)

The second rejection is directed against Applicant's claims 1, 4, 7, 10, 11, 13-16, 31, 33 and 34. These claims describe methods of reducing combustion residues of coated, wood-free paper that have an ISO brightness of 80% or more and an opacity of 80% or more, by including calcium oxalate in the pigment in the recited amounts; the second rejection is also directed against paper made by this method.

Hampl is the primary piece of cited art. Hampl discloses high opacity cigarette wrapping papers made of a white pigment and a black pigment. The white pigment may be calcium carbonate.

Briskin '559 is relied on as disclosing that calcium oxalate may be applied as a pigment to the paper and the Examiner refers to Briskin '559 (col. 6, lines 37+) in this regard. The Examiner states that it would have been obvious to apply calcium oxalate to the surface of the paper taught in Hampl in order to improve the ashing properties of the paper.

Briskin '559 col. 3, lines 39-45 teach the problem that Briskin was facing - having insufficient ash-forming ingredients in the smoking product. Briskin '559 states it is an object of his invention to provide a method for producing a smoking product containing ash-forming ingredients of a type and concentration to form an ash to enable the ash to build up on the end of the smoking product.

Therefore, the improved ashing of Briskin '559 does not mean "decrease" the combustion ratio. Briskin '559 teaches the art to incorporate, that is, add, ash forming components (see the abstract) into his paper. The ash content of cigarette paper is responsible for the maintenance of the ash on the end of the cigarette - without which the end would be constantly falling off. Thus, Briskin '559's teaching of improving ash in cigarette paper is the direct opposite desired effect of the method for decreasing the combustion residue of the invention.

The Examiner states that it would have been obvious after reading Briskin '559, to vary the amount of calcium oxalate coated on the claimed paper in order to control the ashing content of the paper. Applicant respectfully disagrees. Briskin does not lead the person of ordinary skill in the art to decrease the combustion ratio by adding additional calcium oxalate so that the calcium oxalate makes up at least 10% of the pigment of a coated, wood-free paper. Briskin '559 states that improvement in the characteristics of the ash left by a burned smoking product is achieved when calcium oxalate is present in an amount as little as 1 percent by weight (col. 4, lines 31-45).

Moreover, Briskin '559 does not state that adding additional calcium oxalate will decrease the combustion residue. Referring again to Briskin '559 col. 4, lines 31-45, Briskin '559 states that while an amount as little as 1 percent calcium oxalate by weight

is acceptable, it is preferred to have sufficient calcium (or magnesium) oxalate to give an ash of up to 40 percent by weight calcium oxalate. Briskin '559 does not state that one adds more calcium oxalate to decrease the ash. Briskin '559 implies one adds "sufficient" (more?) calcium oxalate to increase the ash to the desired percent by weight.

Briskin '109 does not cure the deficiencies of Briskin '559 in this regard.

Additionally, Hampl teaches a high opacity cigarette paper which contains both white and black pigments. Putting the black pigment into the paper greatly increases opacity. (Opacity is a measure for how well you can see through a paper. The higher the opacity number, the less one can see through the paper.) Brightness (i.e., whiteness) is impaired by putting black pigments into paper - but brightness is desired for printing. It is very difficult to print black on black.

In addition to the other advantages, the present invention makes use of the exceptionally good optical properties of calcium oxalate in that calcium oxalate imparts both a high brightness and a high opacity to the paper. The light scattering coefficient in combination with pigment packing gives a much better optical effect when calcium oxalate is used than could have been expected on calcium oxalate's rather modest refractive index.

Not only is there no suggestion in Hampl or the secondary art that calcium oxalate is such an excellent pigment that it can readily replace common pigments without any loss of brightness and opacity of the product, but also, there is no suggestion in Hampl or the secondary art to remove and leave out the black pigment that Hampl specifically adds; to leave out Hampl's black pigment destroys the invention of Hampl.

Accordingly, *prima facie* obviousness is not established for at least the following reasons. (1) There must be a basis in the art for combining or modifying the cited art. Here, the Examiner has pointed to nothing in the cited art that would suggest that a decrease in the combustion residue of coated, wood-free papers could be achieved by adding calcium oxalate according to the claims. Indeed, the cited art is specific for cigarette papers and disclosers that at least a certain amount of ash forming ingredients must be kept in the final product. (2) The Examiner has relied on art that teaches how to improve the ashing of cigarette papers. However, improvements in the ashing of cigarette papers is non-analogous art with regard to a problem of how to reduce the combustion ratio of coated, wood-free papers. (3) The cited art does not teach the problem of the relatively higher combustion ratios that the art finds with coated, wood-free papers. Therefore, the cited art does not suggest the solution. (4) The invention does not require the presence of a black pigment as Hampl does; art is not properly combinable or modifiable if their intended function is destroyed.

The Third Rejection under 35 U.S.C. § 103(a)

Claim 8 is rejected in the third rejection. Claim 8 is directed to the method of any of claims 1, 4 or 31, in which the calcium oxalate is a monohydrate that has been ground and 90% of the particles are smaller than 2.3 μm and only 10% are smaller than 0.5 μm .

Hampl is the primary piece of cited art. Hampl discloses high opacity cigarette wrapping papers made of a white pigment and a black pigment. The white pigment may

be calcium carbonate. Briskin '559 is relied on as above. The Examiner notes that Briskin '559 does not teach the claimed particle size limitations.

Rafton is relied on as disclosing that papers coated with alkaline fillers are inferior if the particle size is not homogenous.

The comments above with regard to the cited art are also incorporated here.

Additionally, it is not sufficient that Rafton generally suggests that a homogenous particle size may be desirable. Motivation to combine must be specific for the claimed invention. Nothing in Rafton points to the particles sizes recited in the claimed method.

Accordingly, *prima facie* obviousness is not established for at least the following reasons: (1) There must be a basis in the art for combining or modifying the cited art. Here, the Examiner has pointed to nothing in the cited art that would suggest that a decrease in the combustion residue of coated, wood-free papers could be achieved by adding calcium oxalate according to the claims. Indeed, the cited art is specific for cigarette papers and discloses that at least a certain amount of ash forming ingredients must be kept in the final product. None of the cited art suggest the specific particle sizes as recited in the claims. (2) The Examiner has relied on art that teaches how to improve the ashing of cigarette papers. However, improvements in the ashing of cigarette papers is non-analogous art with regard to a problem of how to reduce the combustion ratio of coated, wood-free papers. (3) The cited art does not teach the problem of the relatively higher combustion ratios that the art finds with coated, wood-free papers. Therefore, the cited art does not suggest the solution. (4) The invention does not require the presence of a black pigment as Hampl does; art is not properly combinable or modifiable if their intended function is destroyed.

The Fourth Rejection under 35 U.S.C. § 103(a)

Claims 12 and 32 are rejected in the fourth rejection. The claims are directed to method of reducing wear of the wire used to make coated, wood-free paper.

The comments to the first rejection are incorporated herein. Briskin '109 does not cure the deficiencies of the cited art.

Accordingly, *prima facie* obviousness is not established for at least the following reasons. (1) There must be a basis in the art for combining or modifying the cited art. Here, the Examiner has pointed to nothing in the cited art that would suggest that wear on the wire that is used in making coated wood-free papers could be reduced by adding calcium oxalate according to the claims. (2) The Examiner has relied on art that teaches how to improve the ashing of cigarette papers. However, improvements in the ashing of cigarette papers is non-analogous art to how to reduce the wear on the wire used in the paper making. (3) The cited art does not teach the problem with the wear of the wire that is used to make coated, wood-free paper. Therefore, the cited art does not suggest the solution.

Summary of the Rejections under 35 U.S.C. § 103(a)

Applicant respectfully asserts that each and every one of the rejections under 35 U.S.C. § 103(a) have been overcome by the remarks above. Accordingly, withdrawal of the rejections and allowance of the claims are respectfully requested.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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